

# Klamath Basin Update



Item 5 – August 15, 2019 – Santa Rosa, CA



Clayton Creager – North Coast Regional Water Board  
Mark Bransom – Klamath River Renewal Corporation  
Parker Thaler - SWRCB Division of Water Rights  
Phillip Meyer – SWRCB Division of Water rights



# Presentation Outline

Photo by  
Randy Turner

- Klamath Basin Water Quality Improvement Program Update – Clayton Creager
- Lower Klamath River Project Water Quality Certification (SWRCB) - Parker Thaler
- Klamath River Renewal Corporation (KRRC) – Mark Bransom



Photo by  
Randy Turner

# Water Quality Improvement Program Update

---

- Klamath Basin TMDLs
- Watershed Stewardship Approach
- Water Quality Improvement Techniques
- Example Initiatives & Projects

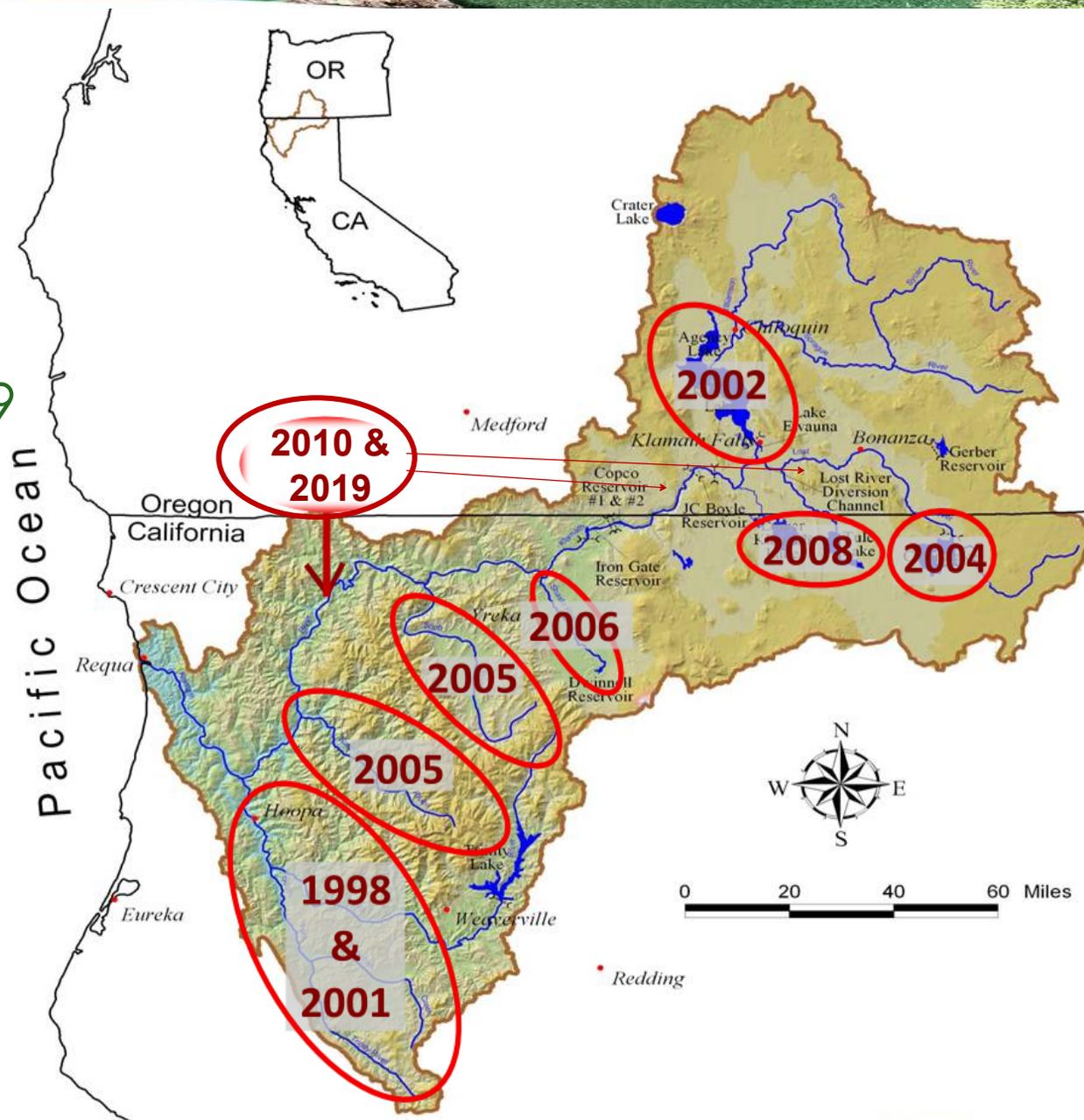
# Klamath Basin TMDLs

## Oregon

- Upper Klamath Lake, 2002
- Lost River, 2019
- Klamath River, 2019

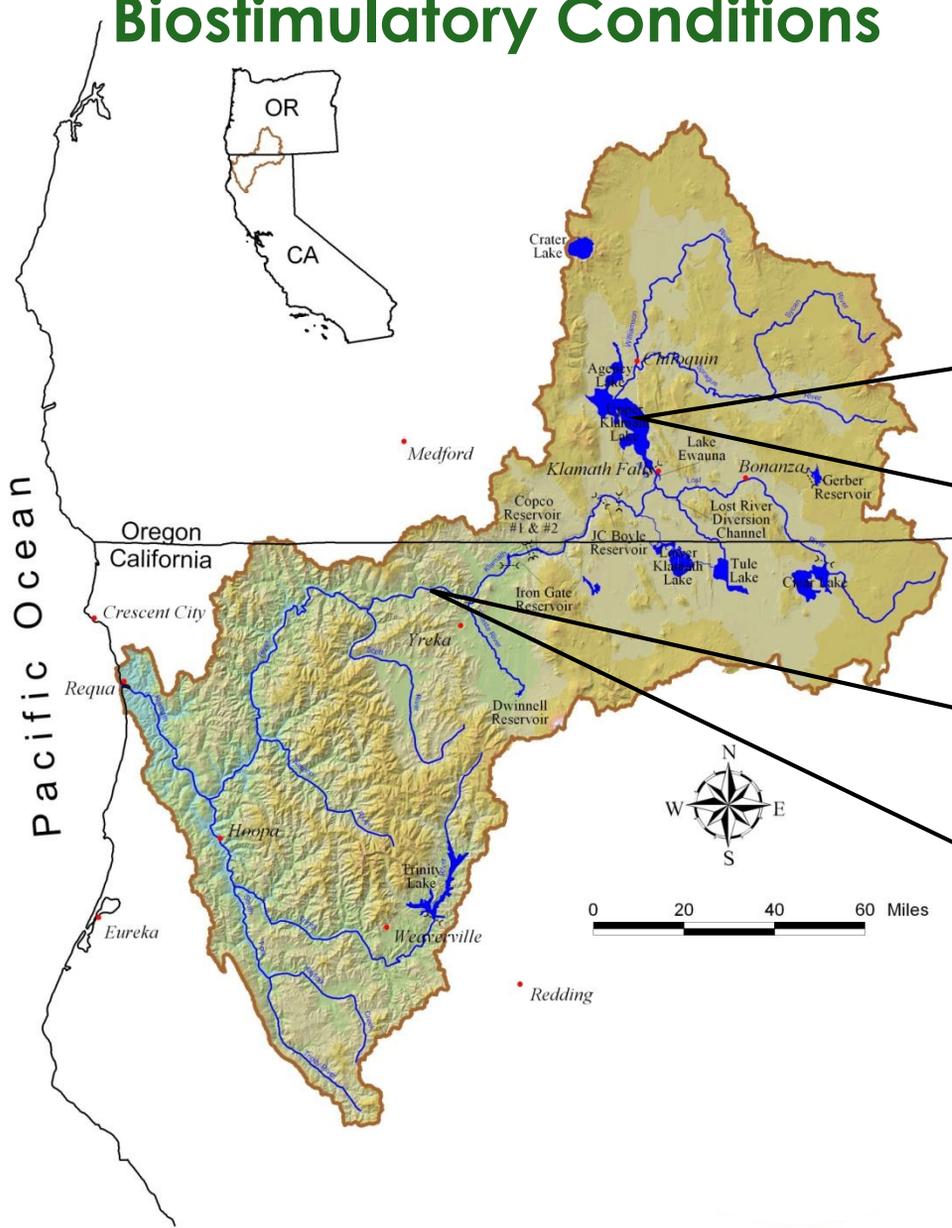
## California

- Trinity S. Fork, 1998
- Trinity, 2001
- Salmon, 2005
- Scott, 2005
- Shasta, 2006
- Lost, 2008
- Klamath, 2010



# Klamath Basin Overview

## Biostimulatory Conditions



## Oregon

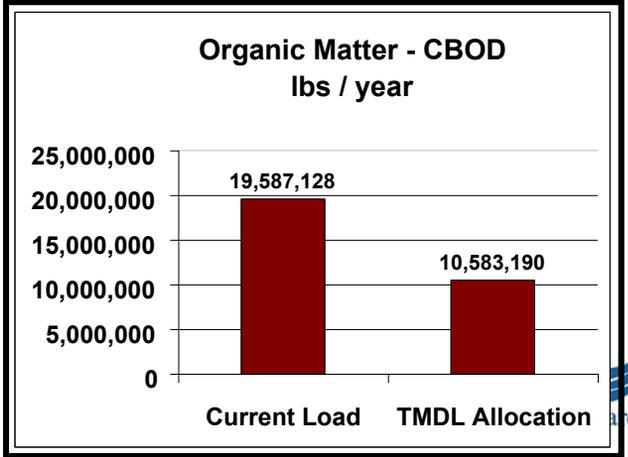
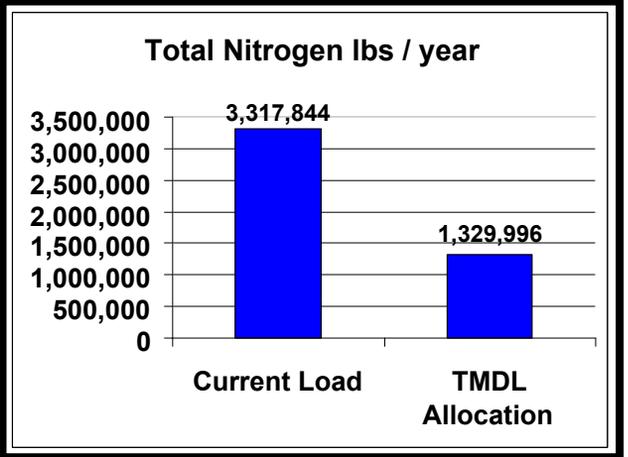
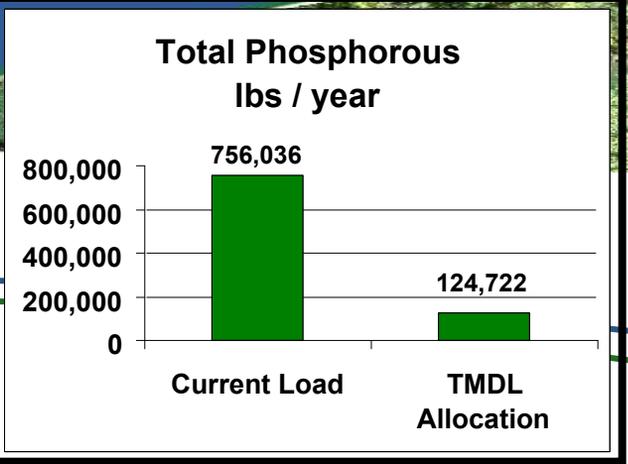
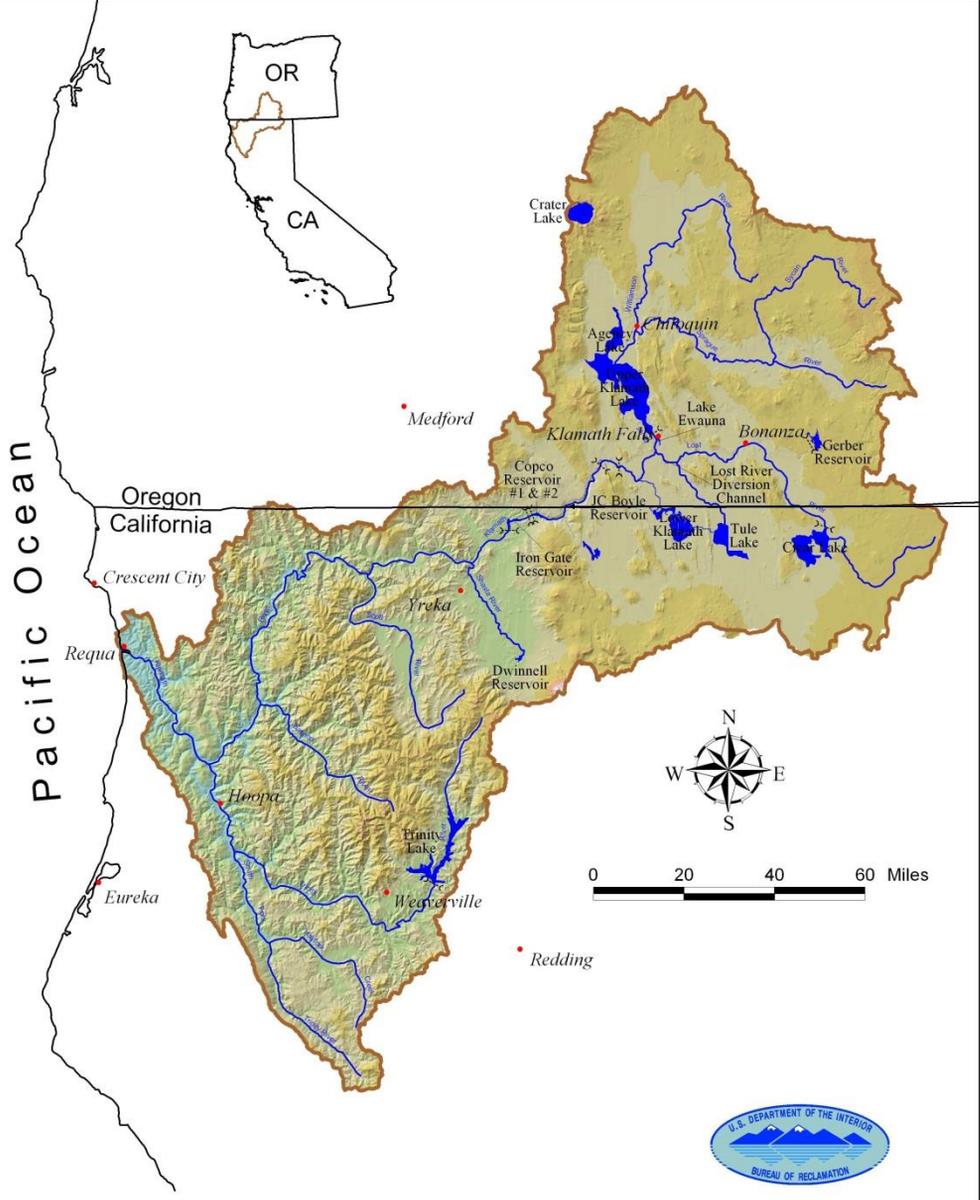
- Temperature
- DO
- pH
- Ammonia
- Chlorophyll-a

## California

- Temperature
- Organic / DO
- Nutrients
- Sediment
- Microcystin

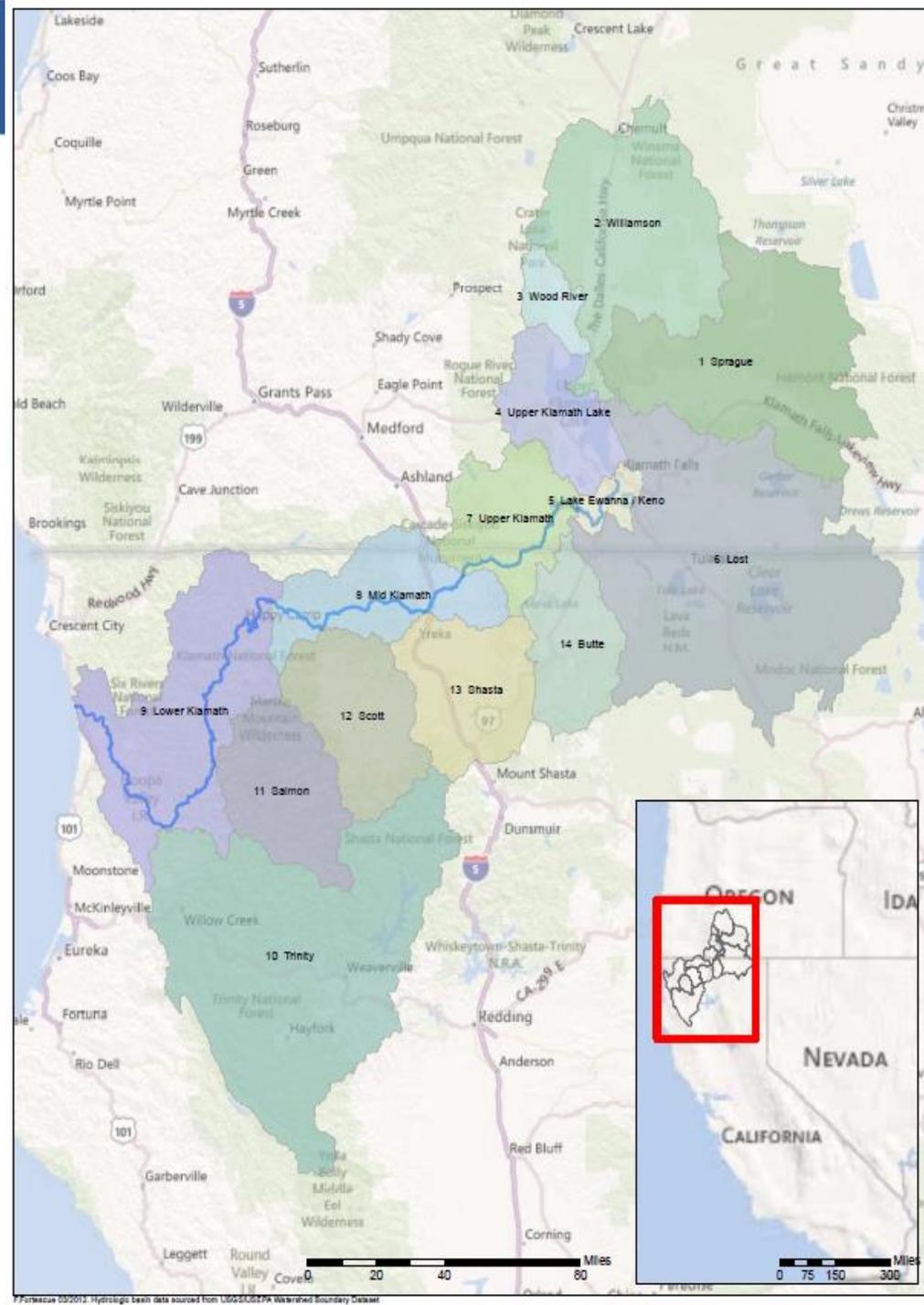


# TMDL Allocations at Stateline



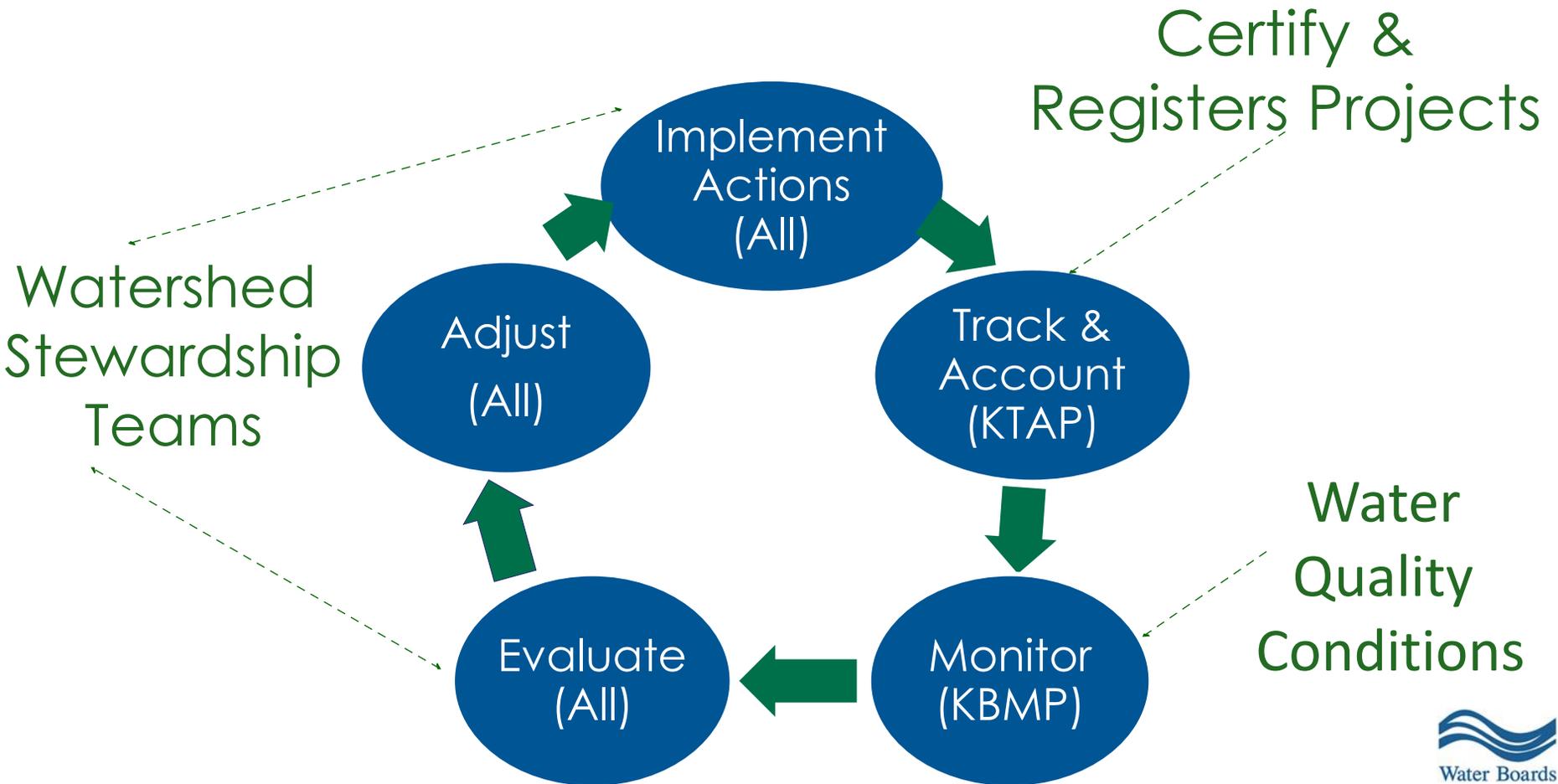
# Klamath Basin Water Quality Strategy

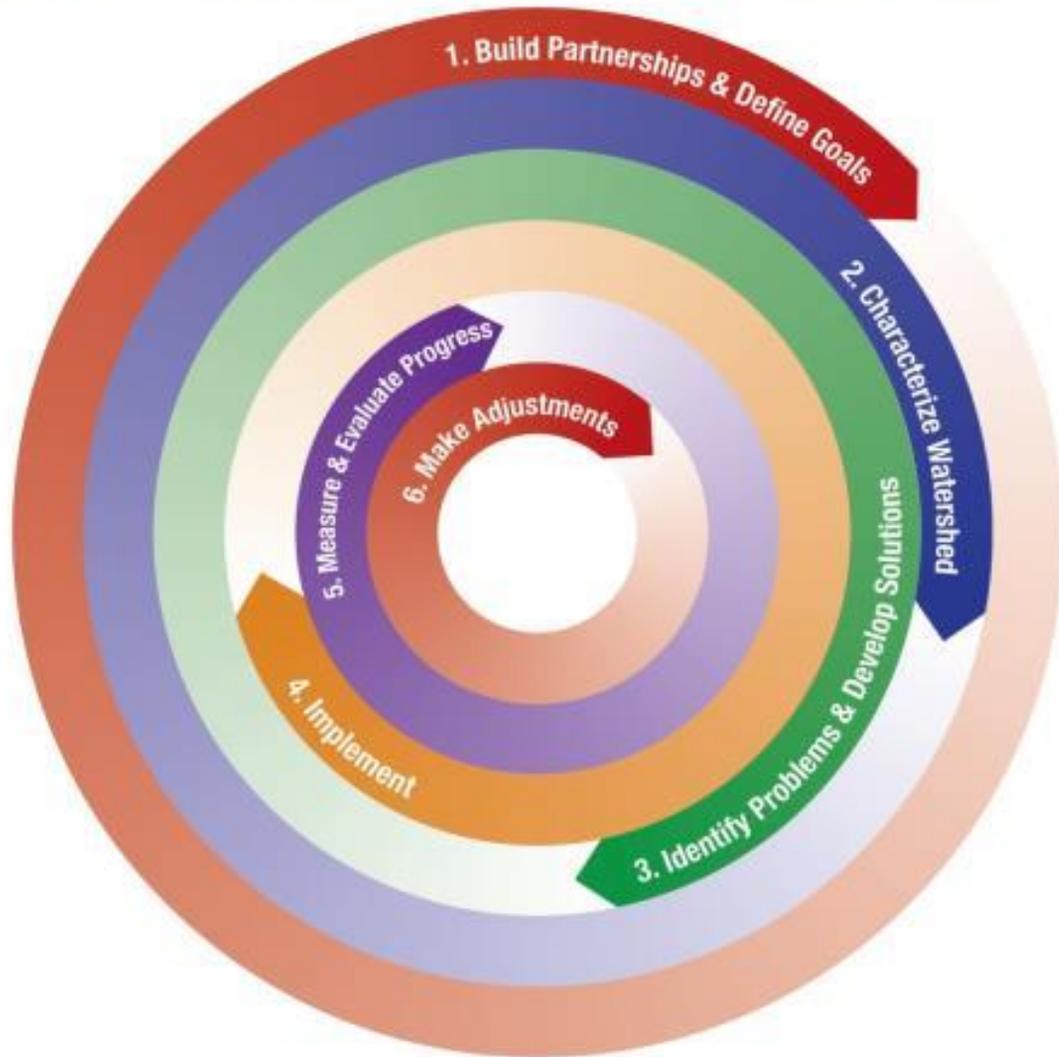
- Manage as an integrated aquatic ecosystem
- Implement permits and conduct necessary enforcement
- Develop voluntary watershed stewardship groups in sub-basins
- Address legacy impacts



# Klamath Watershed Stewardship

## Adaptive Management Framework



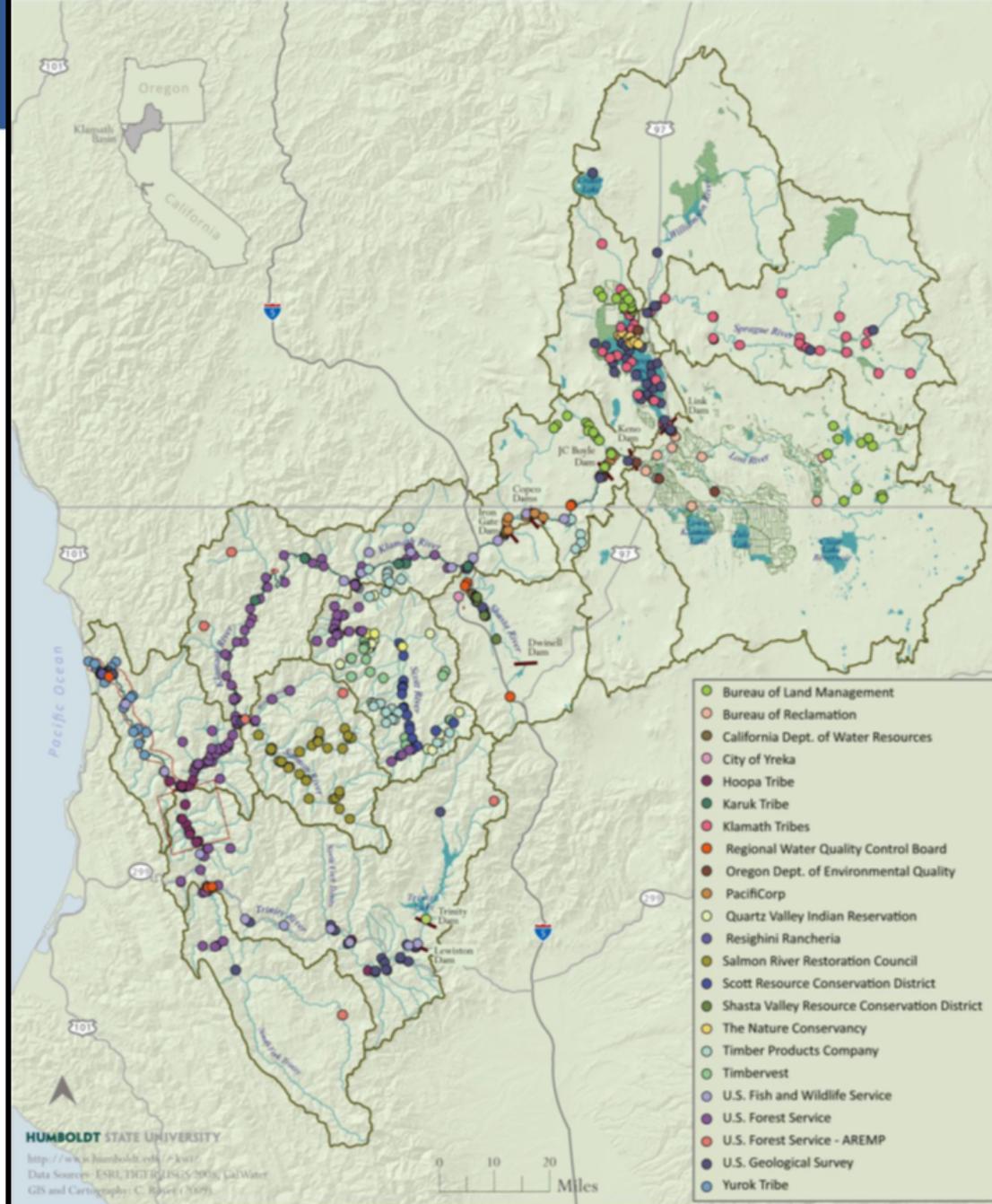


## Collaborative Adaptive Management Cycle

# Klamath Basin

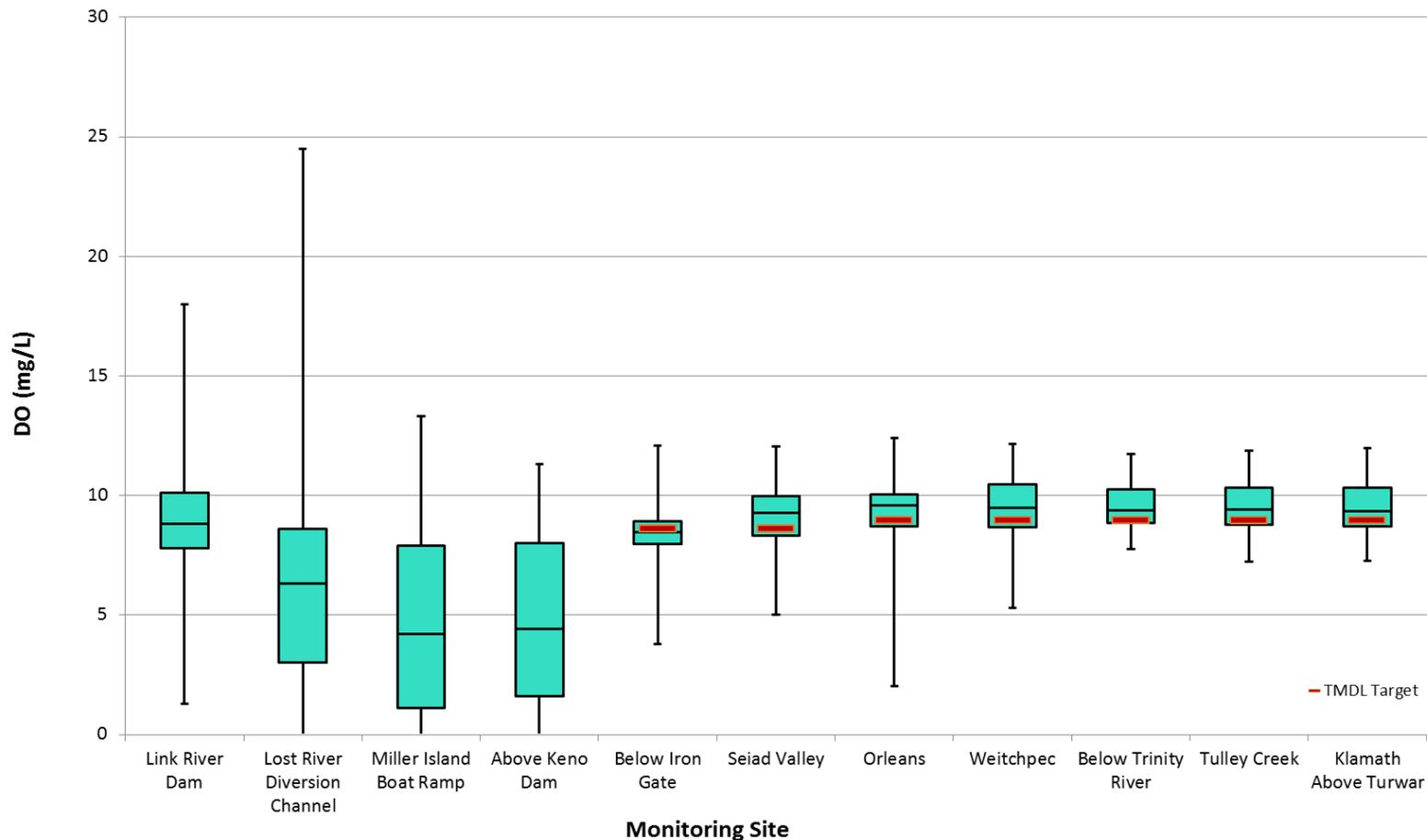
## Monitoring Program

- Monitoring coordination
- Common analytical methods and sampling protocols
- Unified data management
- Membership meetings
- Watershed stewardship assessment reports
- Web Information Portal (Blue-green Algae Tracker)
- Project Tracking database (KTAP)
- [www.kbmp.net](http://www.kbmp.net)
- Funding Depleted



# Sonde Data – Dissolved Oxygen

Dissolved Oxygen - May to October 2009-2014



Data sources:  
USGS,  
USBR,  
Karuk  
Tribe,  
Yurok  
Tribe



# Example Initiatives & Projects

---

Apologies to all landowners, agencies, Tribes, and non-profit organizations who have participated in an initiative or undertaken a project for not acknowledging your work here today. The projects depicted are meant as examples of types of efforts underway throughout the Klamath Basin and in no way reflect the total effort.



# IM -11 WQ Improvement Projects

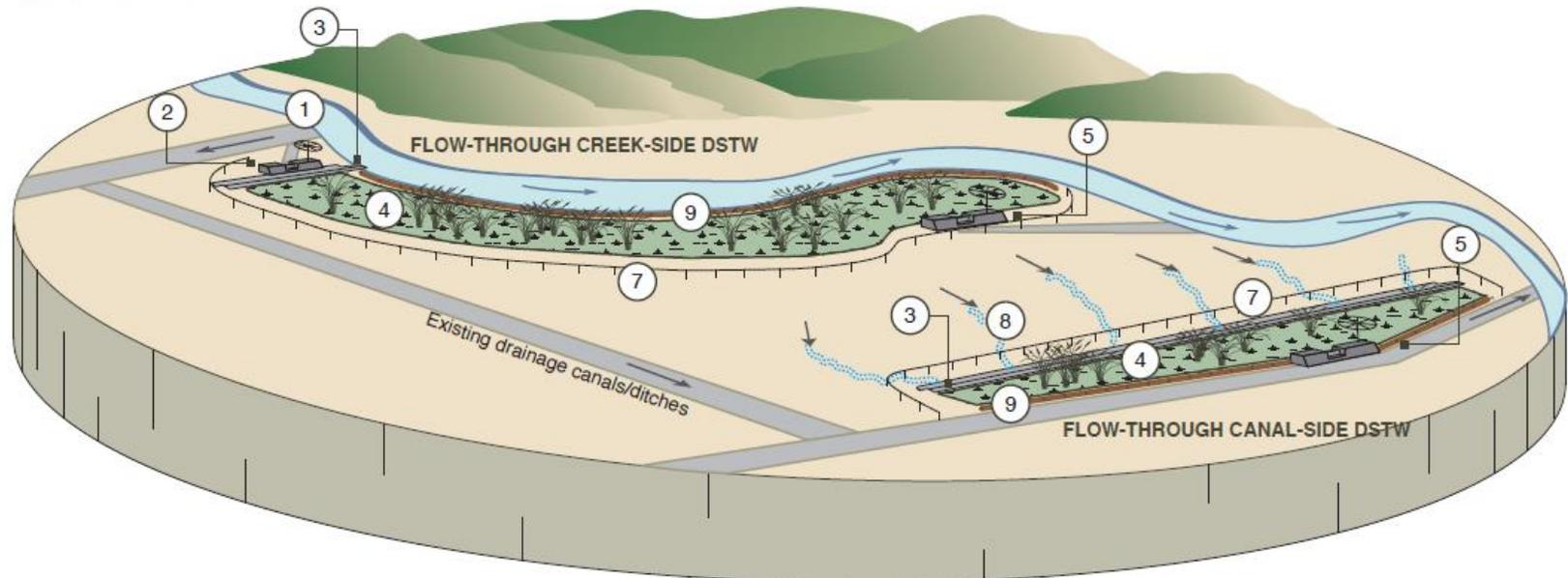
---

- \$5,400,000 at license transfer (OWEB selected as fiscal agent)
- Priority list of projects
  - ✓ diffuse source treatment wetlands
  - ✓ riparian restoration
  - ✓ lake fringe wetland restoration
  - ✓ agriculture water conservation piping
- Governance completed

# Diffuse Source Treatment Wetlands

- Wood River: 4 Pilot DSTWs – Constructed with monitoring ongoing
- Sprague River: 6 DSTWs – NPS 319(h) cancelled due to water rights conditions

Fig. 3.7 Concept designs for flow-through creek-side and flow-through canal-side DSTWs.





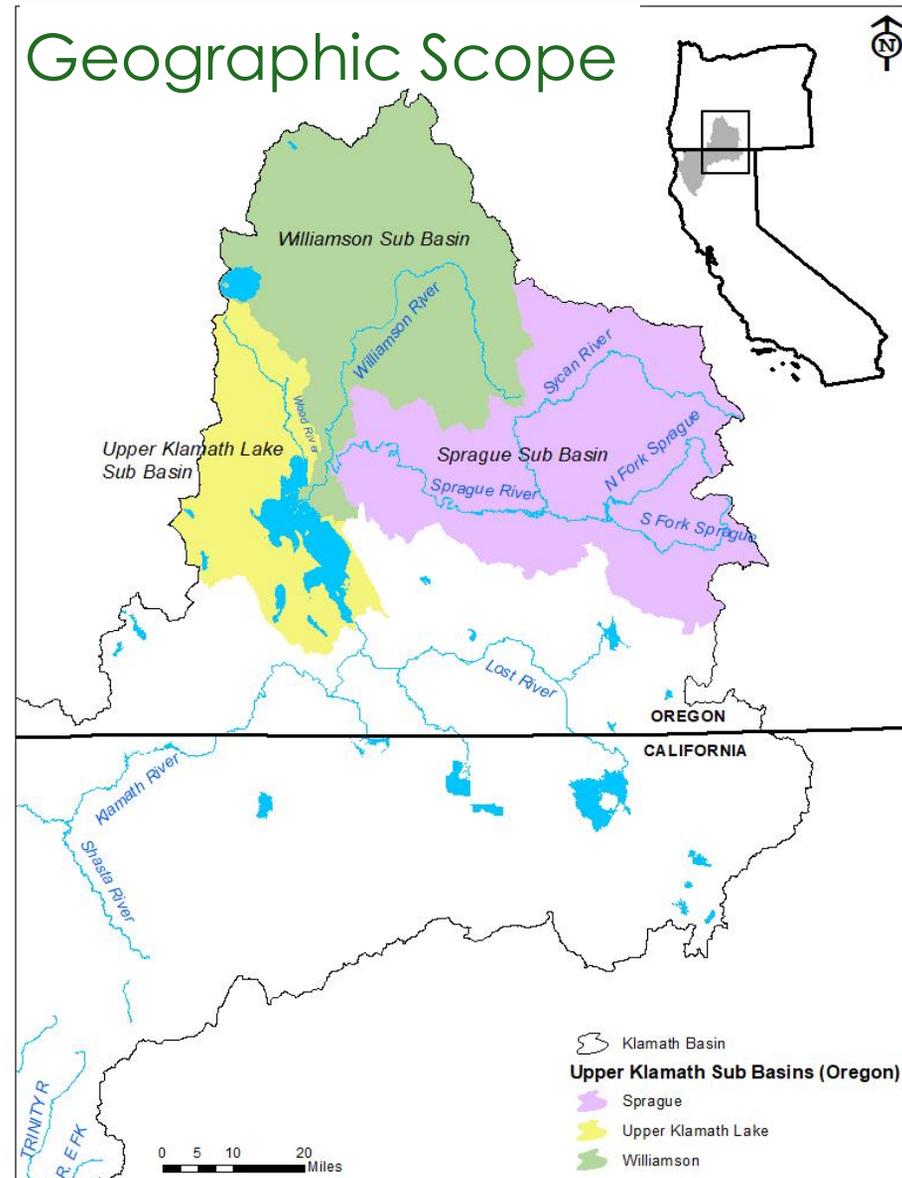
Upper Klamath  
Basin Watershed  
Action Plan  
—  
(UKWAP)

# UKWAP

## Purpose

- Fills the need for a restoration plan identified during the community-led effort to build the Upper Klamath Basin Comprehensive Agreement
- Develop restoration project prioritization tools and assemble content
- Provides process for non-profit, state, federal, and tribal entities to collaborate on projects

## Geographic Scope





# ODEQ and OR Department of Agriculture

---

- TMDL Issued in 2002
- TMDL Requires Designated Management Agencies (DMA's) develop implementation plans
- Target pollutant phosphorus
- 40% phosphorus reduction from external sources
- Temperature TMDL for Klamath River under development
- ODA named a DMA in the TMDL
- ODA designated CWA authority for agricultural operations in Oregon
- ODA developed Water Quality Management Plan and Area Specific Rules for UKL

# OR Department of Agriculture

Upper Klamath Lake Agricultural Pump Sites and Drainage Areas



- ODA Collaborative
  - ✓ Working with Landowners
  - ✓ Working with Klamath Tribes
  - ✓ Working with other partners
- Pump Location Map
  - ✓ 8 additional locations
  - ✓ Similar irrigation practices
  - ✓ Historical wetland complexes
  - ✓ Irrigation return / Storm water

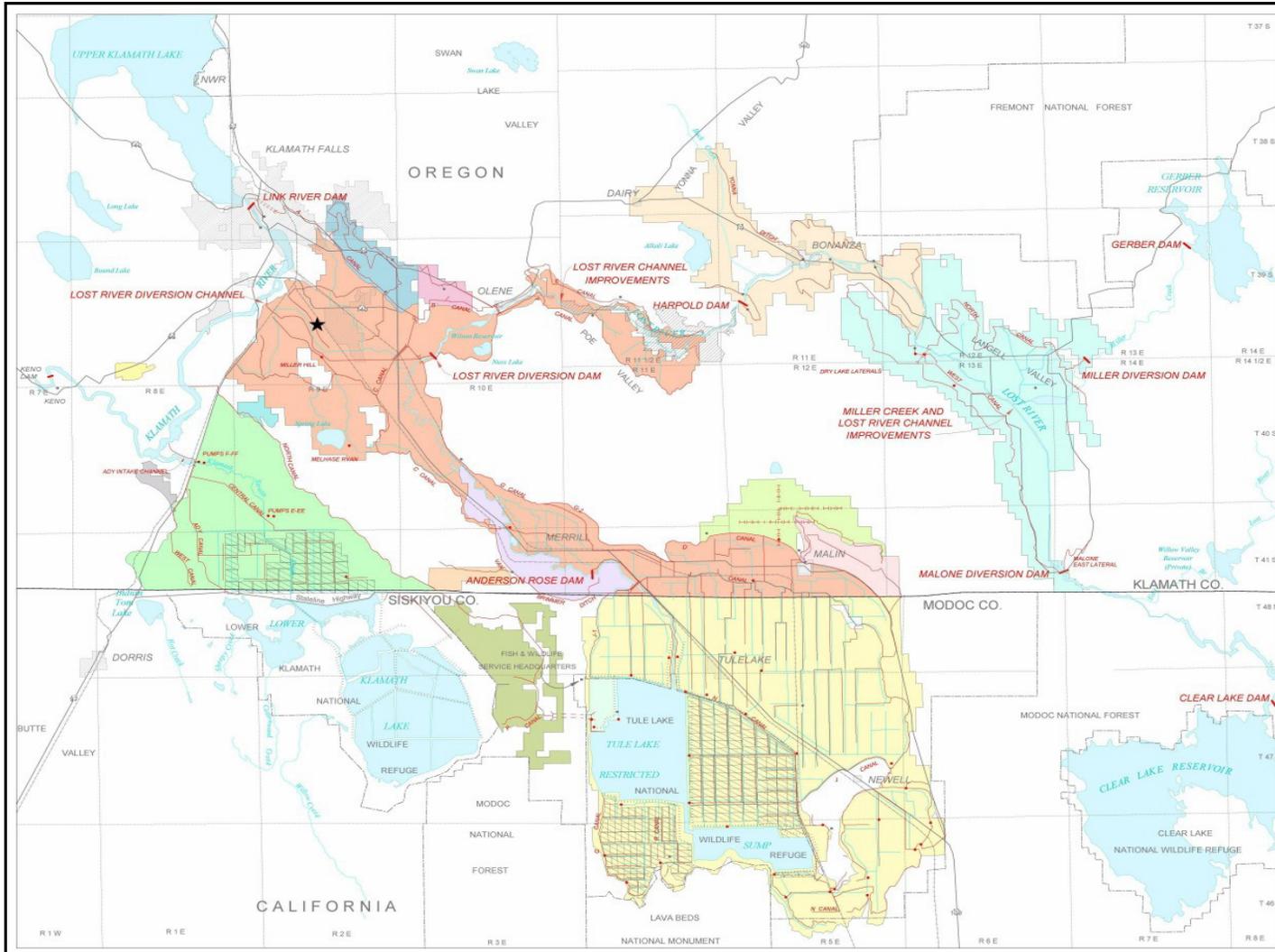


# Lower Klamath Lake Watershed Stewardship Partnership

---

- Initial partners include USBR, USFWS, KWUA, IDs, ODEQ, KWP, Farmers Conservation Alliance & NCRWQCB
- Development of Initiating Charter / operating agreement delayed due to reconsideration of Oregon's Klamath River temperature TMDL
- Charter objectives include improved water quality, restoration, and water conservation

# Geographic Scope LKL Stewardship



# Integrated Fisheries Restoration and Monitoring Plan

- USFWS sponsored plan
- Planning Reaches:  
Upper Klamath Lake,  
Mid-River, and Estuary
- Federal & state  
agencies, Tribes, &  
NGOs
- Completion by 2020

## Klamath Basin Integrated Fisheries Restoration and Monitoring Plan (IFRMP) Synthesis Report

FINAL REPORT

*August 14 2017*



Prepared for the Pacific States Marine Fishery Commission



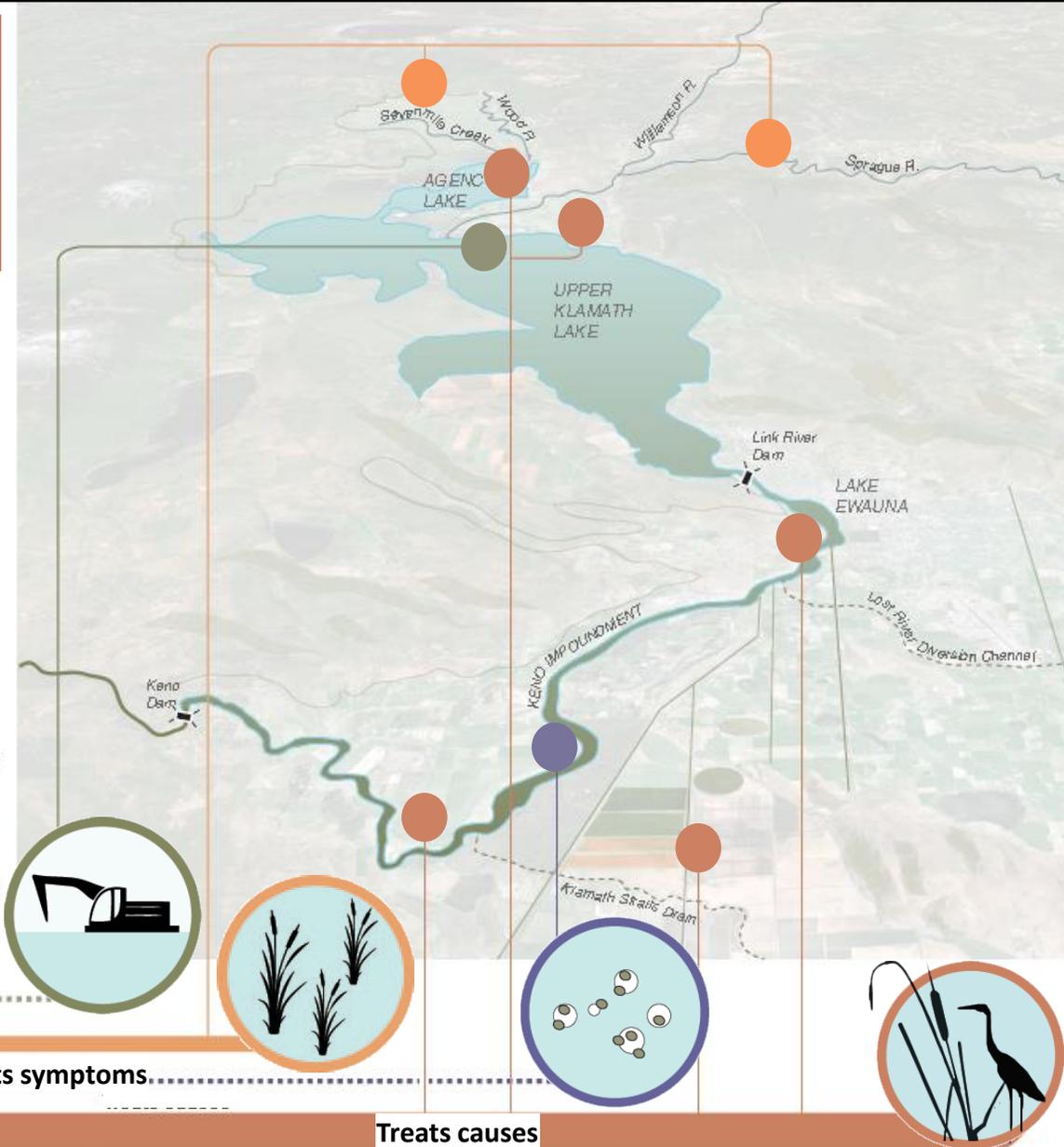
# Klamath WQ Workshop: Project Network Design

**REHABILITATED WETLANDS**  
ALONG UPPER KLAMATH LAKE,  
AGENCY LAKE, LAKE EWAUNA,  
KENO IMPOUNDMENT

**SEDIMENT P SEQUESTRATION**  
USING ALUM MICRO-FLOC  
W/AERATION/OXYGENATION

**DSTWs IN WOOD  
AND SPRAGUE RIVER  
VALLEYS**

**TARGETED DREDGING**  
IN UKL & AGENCY LAKE  
COMBINED W/IN-BASIN  
SEDIMENT RE-USE



Years to effective treatment: 3-5

Treatment is immediate

Years to effective treatment: 1-2

Treatment is immediate

Years of effective treatment:

5-10 years

15-20 years

20-30 years

30-50 years

Treats symptoms

Treats causes

Treats symptoms

Treats causes



# Other Notable Developments

---

---

- Klamath Science Summit – Senator Merkley
- UKL Algal Biomass Removal Feasibility Study
- Upper Klamath Basin External Watershed Loading Reduction Program Plan
- Coalition of the Willing



# Coalition of the Willing: WQ Perspective

---

- Water quality in the Klamath Basin has degraded over time
- Water quality can be improved
- Improved water quality is essential to fish health and abundance
- Physical habitat restoration and water quality improvement measures often overlap
- Restoration measures can benefit agricultural operations



# Klamath River Update

---

---

## Questions / Comments



Photo: Randy Turner



---

# SWRCB Lower Klamath Project Water Quality Certification

---

Parker Thaler - SWRCB Division of Water Rights  
Philip Meyer – SWRCB Division of Water Rights